



TF5123

JFET

N-CHANNEL JUNCTION FIELD EFFECT TRANSISTOR

DESCRIPTION

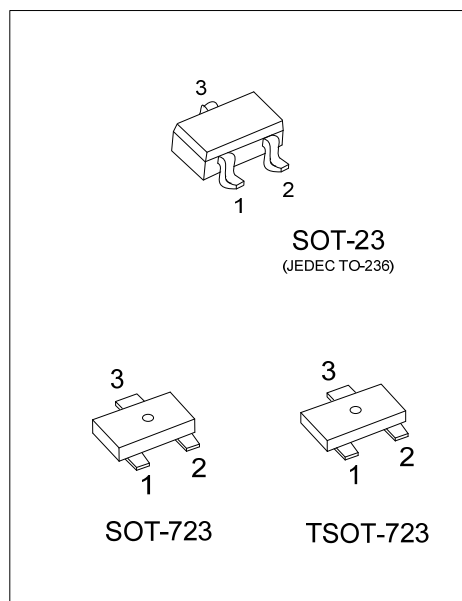
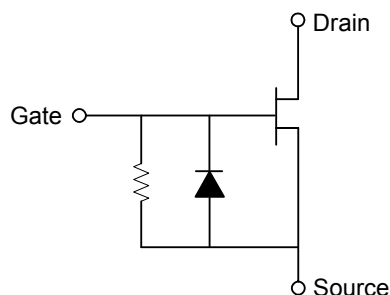
The UTC **TF5123** is an N-Channel Junction FET, it uses UTC's advanced technology to provide the customers with high voltage gain, etc.

The UTC **TF5123** is suitable for electret capacitor microphone applications.

FEATURES

- * High voltage gain
- * For electret capacitor microphone

EQUIVALENT CIRCUIT



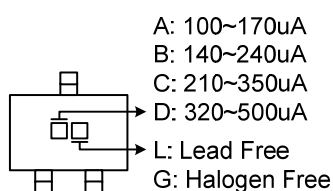
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
TF5123L-xx-AE3-R	TF5123G-xx-AE3-R	SOT-23	D	S	G	Tape Reel
TF5123L-xx-AH7-R	TF5123G-xx-AH7-R	TSOT-723	D	S	G	Tape Reel
TF5123L-xx-AQ3-R	TF5123G-xx-AQ3-R	SOT-723	D	S	G	Tape Reel

Note: Pin Assignment: D: Drain S: Source G: Gate

	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE3: SOT-23, AH7: TSOT-723, AQ3: SOT-723
	(3)Rank	(3) x: refer to CLASSIFICATION OF I _{DSS}
	(4)Green Package	(4) G: Halogen Free and Lead Free, L: Lead Free

MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Gate to Drain Voltage	V_{GDO}	-20	V
Drain Current	I_D	10	mA
Gate Current	I_G	10	mA
Allowable Power Dissipation	P_D	100	mW
Junction Temperature	T_J	+125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +125	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

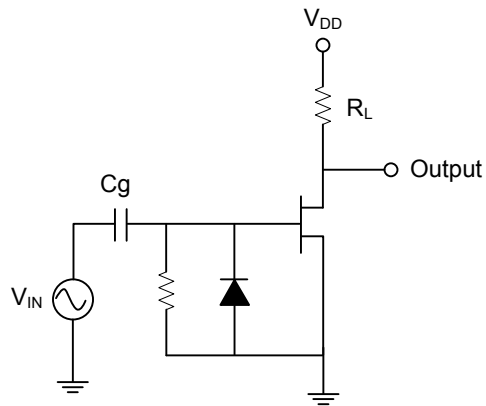
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate to Drain Breakdown Voltage	$V_{(BR)GDO}$	$I_G=-100\mu\text{A}$	-20			V
Drain Current	I_{DSS}	$V_{DS}=2\text{V}$, $V_{GS}=0\text{V}$	100		500	μA
Gate Off Voltage	$V_{GS(OFF)}$	$V_{DS}=2\text{V}$, $I_D=1\mu\text{A}$, $I_{DSS}=250\mu\text{A}$		-0.3		V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS}=2\text{V}$, $V_{GS}=0\text{V}$, $I_{DSS}=250\mu\text{A}$		2.1		mS
Input Capacitance	C_{ISS}	$V_{DS}=2\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		9.0		pF
Voltage Gain	G_V	$V_{DD}=2\text{V}$, $R_L=2.2\text{k}\Omega$, $C_g=5\text{pF}$, $f=1\text{kHz}$, $V_{IN}=10\text{mV}$, $I_{DSS}=100\mu\text{A}$		1.3		dB
		$V_{DD}=2\text{V}$, $R_L=2.2\text{k}\Omega$, $C_g=5\text{pF}$, $f=1\text{kHz}$, $V_{IN}=10\text{mV}$, $I_{DSS}=250\mu\text{A}$		3.4		dB
		$V_{DD}=2\text{V}$, $R_L=2.2\text{k}\Omega$, $C_g=5\text{pF}$, $f=1\text{kHz}$, $V_{IN}=10\text{mV}$, $I_{DSS}=350\mu\text{A}$		3.6		dB
Delta Voltage Gain	$\Delta G_V(V)$	$V_{DD}=2\text{V}\sim 1.5\text{V}$, $R_L=2.2\text{k}\Omega$, $C_g=5\text{pF}$, $f=1\text{kHz}$, $V_{IN}=10\text{mV}$		-0.7		dB
Frequency Characteristics	$\Delta G_V(f)$	$V_{DD}=2\text{V}$, $R_L=2.2\text{k}\Omega$, $C_g=5\text{pF}$, $f=1\text{kHz}\sim 110\text{Hz}$, $V_{IN}=10\text{mV}$		-0.2		dB
Output Noise Voltage	V_{NO}	$V_{DD}=3\text{V}$, $C_g=5\text{pF}$, A-Curve Filter, $R_L=1.0\text{k}\Omega$, $I_{DSS}=250\mu\text{A}$		-107		dB
		$V_{DD}=3\text{V}$, $C_g=5\text{pF}$, A-Curve Filter, $R_L=2.2\text{k}\Omega$, $I_{DSS}=250\mu\text{A}$		-104		dB
Total Harmonic Distortion	THD	$V_{DD}=2\text{V}$, $R_L=2.2\text{k}\Omega$, $C_g=5\text{pF}$, $f=1\text{kHz}$, $V_{IN}=30\text{mV}$, $I_{DSS}=250\mu\text{A}$		1.0		%

■ CLASSIFICATION OF I_{DSS}

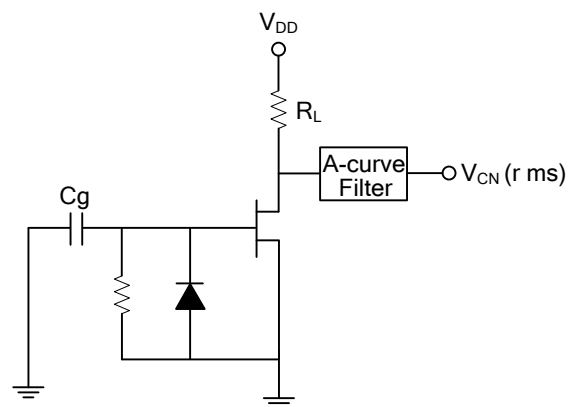
RANK	A	B	C	D
$I_{DSS} (\mu\text{A})$	100 ~ 170	140 ~ 240	210 ~ 350	320 ~ 500

■ TEST CIRCUITS

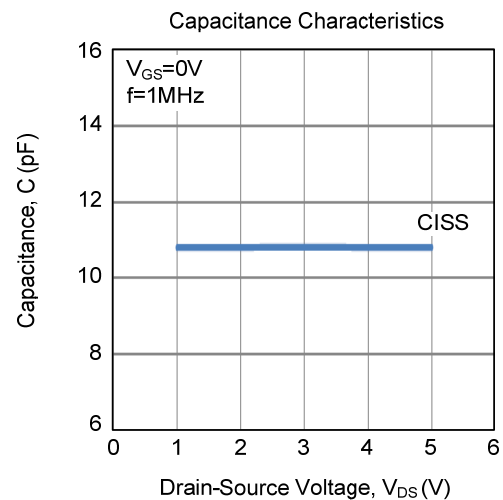
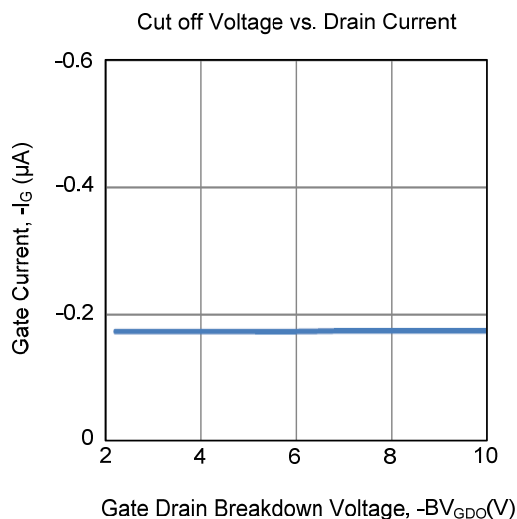
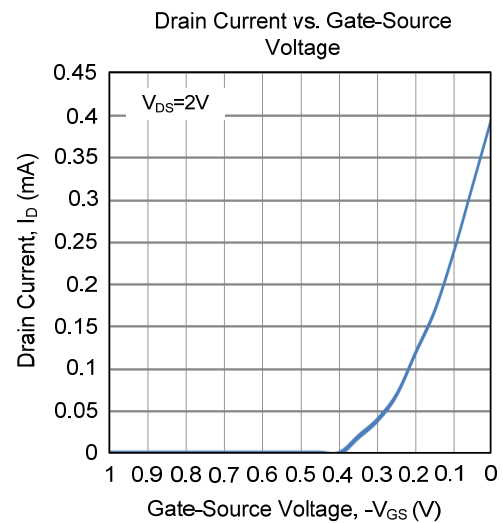
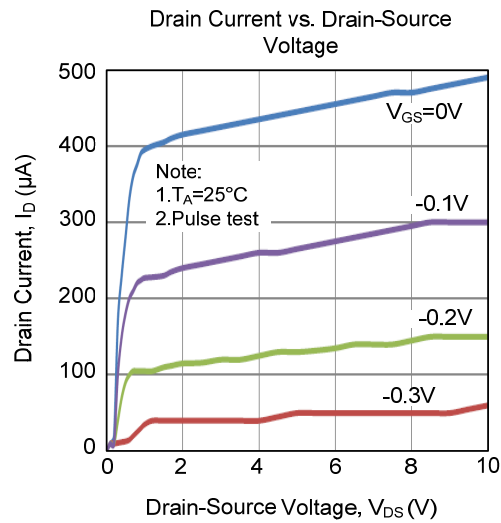
Voltage Gain
Frequency Characteristics
Total Harmonic Distortion



Output Noise Voltage



■ TYPICAL CHARACTERISTICS



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